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ABSTRACT

This paper compares descriptive information based on analyses of the pilot and live administrations of the Alabama High School Graduation Examination (AHSGE). The AHSGE, a product of decisions made in 1977 and 1984 by the Alabama State Board of Education, is composed of subject tests in reading, mathematics, and language. The pass score for each subject test was established using empirical and judgmental methods based on data from the initial pilot administration. Therefore, it is essential that the live administration data be consistent with the initial pilot data. The purpose of this study was to validate the test development procedure by comparing the difficulty level of common test items measuring competencies on the initial item pilot and on the live administration. The data were collected during 2 phases of pilot testing and 16 live administrations of the AHSGE. The initial item pilot tested 40 schools, with 560 students statewide for each of the 4 test forms. In 1983 form pilot tests, there were about 1,200 11th-grade students. Over 48,000 students participated in the first live administration. The stability of the difficulty level of common items was demonstrated, as was the consistency of the difficulty level of the parallel forms of the AHSGE from initial pilot through live administrations. Results support the test development procedures of the AHSGE. Fourteen tables present summary data, and an eight-item list of references is included. (SLD)

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A Descriptive Comparison of Test Item Statistics from Items Utilized in an Item Pilot, a Form Pilot, and Live Administrations of the Alabama High School Graduation Examination: The 1991 Update

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Introduction

This paper contains a comparison of descriptive information based on analyses of the pilot and live administrations of The Alabama High School Graduation Examination (AHSGE). The AHSGE is a product of decisions made in 1977 by the Alabama State Board of Education; moreover, in 1981, new requirements for graduation from high school were approved which mandated that students pass a minimum competency examination in addition to earning the required Carnegie units (McLean, 1984). The AHSGE is composed of three subject tests: Reading, Mathematics, and Language. The pass score for each subject test of the AHSGE was established using empirical and judgmental methods (Halpin, 1984; Roth, 1984) based on data from the initial pilot administration; therefore, it is essential that the live administration data are consistent with the initial pilot data. The purpose of this study was to validate the test development procedure by comparing the difficulty level of common test items measuring competencies on the initial item pilot and on the live administration.

The data were collected during two phases of pilot testing and sixteen live administrations of the AHSGE. The following section summarizes the item pilot procedure, the form pilot procedure, and the comparisons of pilot data to the live administration data.

Item Pilot Procedure

The initial item pilot procedure was conducted by the Educational Testing Service. According to an October 1, 1982 memorandum from the State Superintendent of Education, Wayne Teague, the item pilot procedure was conducted November 16-18, 1982. All public schools in Alabama with at least 50 students were among the population which was randomly sampled to participate in the item pilot procedure. The state of Alabama was divided into four

regions determined by student population. Fourteen schools and five alternates were randomly selected from each of the four regions.

There were ten booklets of test items. There were three test booklets for reading items, another three test booklets for mathematics items, and four test booklets for language. Table 1 shows the number of students involved in the item pilot at school, district, and state levels.

TABLE 1

Number of Students Involved in Item Pilot at School, District, and State Level

Form	School	Number of Students	
		District	State
(A)--Reading, Mathematics, Language	10	140	560
(B)--Reading, Mathematics, Language	10	140	560
(C)--Reading, Mathematics, Language	10	140	560
(D)--Language	10	140	560
Total	40	560	2240

Note: This table is based on information included with a memorandum from the Alabama State Superintendent of Education to City and County Superintendents of systems.

According to the records of the Alabama State Department of Education, approximately one percent of the 55,000 eleventh grade Alabama students (for the 1982-83 academic year) were randomly selected.

Analysis of Pilot Items

Once the pilot items were administered, the Evaluation and Assessment Laboratory at The University of Alabama analyzed the data from results. The difficulty level and discrimination

index for all pilot items were calculated. The difficulty level indicated the proportion of students who completed the item correctly. The discrimination index showed how well the item discriminated between students who scored high and students who scored low on all test items in the pilot item booklets. The pilot items were analyzed to determine whether they were sexually or ethnically biased. All questionable items were eliminated from the item pool. The next step in the pilot procedure involved the pilot testing of forms. The next section of this paper will provide a brief overview of the procedures involved.

1983 Form Pilot Procedures

Two equivalent forms of the AHSGE were developed from the pool of pilot items for reading, mathematics, and language. The Form Pilot was administered during April 1983. The reading pilot forms were Forms 11 and 12; the mathematics pilot forms were Forms 23 and 24, and the language pilot Forms were forms 35 and 36. The reading, mathematics, and language pilot forms were administered on April 26, 27, and 28, 1983, respectively. The same 1982-83 eleventh grade class was used for the form pilot; however, no school participated in both the item pilot and the form pilot.

Sampling Procedure

The approximately 450 schools were arranged into five achievement strata based upon the average California Achievement Tests performance of the 1981-82 tenth grade class (the eleventh grade class of 1982-83). Once the schools were arranged into five achievement strata, eight schools and two alternate schools were selected from each strata using random sampling procedures. A proportional sample was taken from each of the eight schools until the sample size was approximately 240 per strata.

An alphabetized list of eleventh grade students from the randomly selected schools was obtained. The student lists were numbered and random numbers were generated for each form of the test. One set of students received Forms 11, 23, and 35 for reading, mathematics, and language respectively, and the other set of students in the school received the other forms for each subject area. Approximately 600 students received Forms 11, 23, and 35 and approximately 600 students received Forms 12, 24, and 36. There were about 1,200 students in the total sample from the approximately 55,000 student population for the 1982-83 eleventh grade class. Although each of the five strata had two alternate schools available in case of an emergency, none of the alternate schools were used.

Analysis

Table 2 describes the summary statistics for the pilot forms. The reliability coefficients ranged from .95 to .96 for all pilot forms.

TABLE 2

Summary Statistics for the Pilot Forms of the AHSGE

Subject Form	n	Number of Items	M	SD	Cronbach Alpha
Reading					
Form 11	609	80	72.03	10.66	.95
Form 12	610	80	71.37	11.14	.95
Mathematics					
Form 23	610	95	72.77	16.26	.95
Form 24	610	95	73.18	16.11	.96
Language					
Form 35	615	119	99.12	17.54	.96
Form 36	616	119	98.32	18.58	.96

Note: The sample included about 1231 students out of a population of about 55,000 eleventh graders in the 1982-83 academic year.

Live Administration of the AHSGE

In October 1983, over 48,000 eleventh grade Alabama students participated in the first live administration of the AHSGE. At the time of this study, there have been seventeen additional administrations of the AHSGE. Since the Fall 1983 (Form A) and Spring 1985 (Form B) live administration forms were essentially the same items as those used in the form pilot in April, 1983, the difficulty level from these two forms were used to compare the difficulty levels on different steps in test development. The purpose of this comparison is to demonstrate the

stability of the difficulty level from the initial item pilot to the form pilot and then to the live administration of these same items.

Table 3 describes summary statistics for Forms A and B on live administrations during Fall 1983 and Spring 1985 respectively.

TABLE 3

Summary Statistics for the Live Administration of Forms A and B*

Subject Form	n	Number of Items	M	SD	Cronbach Alpha
Reading					
Form A	48,612	80	73.15	12.45	.97
Form B	1,549	80	73.57	9.38	.95
Mathematics					
Form A	48,612	95	76.83	16.82	.96
Form B	1,549	95	76.85	15.08	.96
Language					
Form A	48,612	119	101.18	19.63	.97
Form B	1,562	100**	86.22**	13.29	.95

* Form A was administered during Fall 1983 which was the first live administration of the AHSGE and Form B was administered Spring 1985. These summary statistics were computed for answer sheets with "first attempt" indications.

** The language examination was shortened to 100 items.

Tables 4 through 13 provide a comparison of the average difficulty level on the initial item pilot, the form pilot, and the live administration for Forms A and B for reading, mathematics, and language. The overall difficulty level for these three developmental stages differs no more than one percent for Form A and Form B at each administration.

TABLE 4

A Comparison of the Average Difficulty Level (percentage correct) on the Initial Item Pilot of the AHSGE for Reading

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1, 2: IV-13	WORDS IN DAILY LIFE; FILLING OUT FORMS	8	88.03	88.81
II-1	CONTEXT CLUES	5	83.98	83.18
III-1	PREFIXES & SUFFIXES	4	87.95	87.15
III-2	ABBREVIATIONS	4	93.73	93.13
IV-1	ALPHABETICAL ORGANIZATION	6	86.52	86.48
IV-3	REFERENCE SOURCES	4	87.35	87.35
IV-4	BOOK SECTIONS	4	81.28	81.00
IV-5	NEWSPAPER SECTIONS	4	92.78	92.65
IV-6	MAIN IDEA: PASSAGES	5	83.52	81.58
IV-7	FIND DETAILS IN A WRITTEN PASSAGE	5	87.90	91.90
IV-8	USE MAPS, GRAPHS, CHARTS, AND TABLES	6	91.05	90.95
IV-9, 10, 11	MAIN IDEA AND DETAIL: GOVERNMENT, LAW, MONEY MANAGEMENT, NUTRITION	9	86.69	86.04
IV-14	ADS, LABELS, CATALOGS, AND DIRECTORIES	6	91.20	91.12
V-1	FOLLOWING DIRECTIONS AND INSTRUCTIONS	6	89.45	88.43
VI-1	FACT AND OPINION	4	79.85	82.40
	Total	**80**	**87.53**	**87.56**

TABLE 5

A Comparison of the Average Difficulty Level (percentage correct) on the Form Pilot of the AHSGE for Reading

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1, 2: IV-13	WORDS IN DAILY LIFE; FILLING OUT FORMS	8	92.31	90.99
II-1	CONTEXT CLUES	5	85.72	86.52
III-1	PREFIXES AND SUFFIXES	4	92.20	88.50
III-2	ABBREVIATIONS	4	95.85	95.85
IV-1	ALPHABETICAL ORGANIZATION	6	88.80	87.80
IV-3	REFERENCE SOURCES	4	93.55	92.10
IV-4	BOOK SECTIONS	4	84.85	83.13
IV-5	NEWSPAPER SECTIONS	4	93.88	94.05
IV-6	MAIN IDEA: PASSAGES	5	87.68	83.56
IV-7	FIND DETAILS IN A WRITTEN PASSAGE	5	88.68	92.20
IV-8	USE MAPS, GRAPHS, CHARTS, AND TABLES	6	92.12	90.32
IV-9, 10, 11	MAIN IDEA AND DETAIL: GOVERNMENT, LAW, MONEY MANAGEMENT, AND NUTRITION	9	88.77	88.97
IV-14	ADS, LABELS, CATALOGS, AND DIRECTORIES	6	91.67	92.73
V-1	FOLLOWING DIRECTIONS AND INSTRUCTIONS	6	89.08	87.33
VI-1	FACT AND OPINION	4	85.00	83.55
	Total	**80**	**90.10**	**89.25**

TABLE 6

A Comparison of the Average Difficulty Level (percentage correct) on the Live Administration of the AHSGE for Reading

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1, 2: IV-13	WORDS IN DAILY LIFE; FILLING OUT FORMS	8	93.00	92.00
II-1	CONTEXT CLUES	5	88.60	90.20
III-1	PREFIXES AND SUFFIXES	4	93.00	88.25
III-2	ABBREVIATIONS	4	96.25	95.75
IV-1	ALPHABETICAL ORGANIZATION	6	91.83	91.67
IV-3	REFERENCE SOURCES	4	93.50	93.00
IV-4	BOOK SECTIONS	4	86.75	83.00
IV-5	NEWSPAPER SECTIONS	4	95.25	96.00
IV-6	MAIN IDEA: PASSAGES	5	90.60	86.20
IV-7	FIND DETAILS IN A WRITTEN PASSAGE	5	92.80	95.20
IV-8	USE MAPS, GRAPHS, CHARTS, AND TABLES	6	94.83	94.00
IV-9, 10, 11	MAIN IDEA AND DETAIL: GOVERNMENT, LAW, MONEY MANAGEMENT, NUTRITION	9	92.89	93.33
IV-14	ADS, LABELS, CATALOGS, AND DIRECTORIES	6	94.50	95.50
V-1	FOLLOWING DIRECTIONS AND INSTRUCTIONS	6	93.83	93.67
VI-1	FACT AND OPINION	4	87.50	88.25
	Total	**80**	**92.50**	**92.00**

TABLE 7

A Comparison of the Average Difficulty Level (percentage correct) on the Initial Item Pilot of the AHSGE for Mathematics

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1	READ AND WRITE: MONEY VALUES, NUMBERS	3	92.47	93.40
I-2	COMPARE DECIMALS: COMPARE FRACTIONS	3	66.07	65.93
I-3	COMPUTATION: WHOLE NUMBERS	6	92.72	92.93
I-4	COMPUTATION: DECIMALS	6	84.68	85.10
I-5	COMPUTATION: FRACTIONS	6	60.88	60.90
I-6	CONVERSION: DECIMALS AND %	3	60.57	58.77
I-7	APPLICATION: RATION, %, DISC, TAXES, COMMISSION	4	57.00	58.85
I-8	CONVERSION: FRACTIONS AND DECIMALS	4	62.80	62.80
I-9	AVERAGES OF WHOLE AND DECIMAL NUMBERS	3	75.93	76.10
I-10	CONVERSION: UNITS OF MEASURE	4	43.90	42.20
II-1	SOLVE PROBLEMS INVOLVING TIME	3	66.60	70.33
II-2	MEASURE LENGTHS BY USE OF A RULER	4	71.45	69.83
II-3	CAPACITIES	3	77.00	77.50
II-4	FIND PERIMETERS	4	89.35	89.10
II-5	FIND RECTANGULAR AREAS	4	31.50	29.28
III-1, 2	INTERPRET: GRAPHS, TABLES, CHARTS	4	78.58	78.48
III-3	INTERPRET: SCALE DRAWINGS	3	78.07	80.20
IV-1	APPROX. BY ROUNDING NUMBERS	3	82.13	82.50
IV-1, 2, 3	GEOMETRIC FORMS AND CONCEPTS	6	89.98	89.42
VI-1, 2, 3	DETERMINE CHANGE: COMPUTE COST, COMPUTE CASH/CREDIT PURCHASE	6	72.83	73.10
VI-4	ALLOCATE TIME AND MONEY	3	63.77	63.60
VI-5	COMPLETE CHECKS AND MONEY ORDERS	3	76.03	72.77
VI-6	SOLVE RATE, TIME, DISTANCE PROBLEMS	3	76.50	76.30
VI-7	COMPUTE SALARIES AND WAGES	4	73.43	73.08
	Total	**95**	**72.47**	**72.48**

TABLE 8

A Comparison of the Average Difficulty Level (percentage correct) on the Form Pilot of the AHSGE for Mathematics

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1	READ AND WRITE: MONEY VALUES, NUMBERS	3	95.67	94.37
I-2	COMPARE DECIMALS: COMPARE FRACTIONS	3	71.73	75.37
I-3	COMPUTATION: WHOLE NUMBERS	6	93.22	94.72
I-4	COMPUTATION: DECIMALS	6	87.67	87.73
I-5	COMPUTATION: FRACTIONS	6	66.88	64.88
I-6	CONVERSION: DECIMALS AND PERCENTS	3	68.50	71.87
I-7	APPLICATION: RATION, %, DISC, TAXES, COMM	4	84.33	66.98
I-8	CONVERSION: FRACTIONS AND DECIMALS	4	61.78	66.80
I-9	AVERAGES OF WHOLE AND DECIMAL NUMBERS	3	80.30	80.07
I-10	CONVERSION: UNITS OF MEASURE	4	51.60	47.15
II-1	SOLVE PROBLEMS INVOLVING TIME	3	72.87	74.97
II-2	MEASURE LENGTHS BY USE OF A RULER	4	70.68	66.90
II-3	CAPACITIES	3	81.63	91.23
II-4	FIND PERIMETERS	4	88.40	91.23
II-5	FIND RECTANGULAR AREAS	4	38.33	37.10
III-1, 2	INTERPRET: GRAPHS, TABLES, CHARTS	4	81.65	80.53
III-3	INTERPRET: SCALE DRAWINGS	3	84.33	80.30
IV-1	APPROXIMATIONS BY ROUNDING NUMBERS	3	85.37	85.40
IV-1, 2, 3	GEOMETRIC FORMS AND CONCEPTS	6	91.15	93.22
VI-1, 2, 3	DETERMINE CHANGE: COMPUTE COST, COMPUTE CASH/CREDIT PURCHASE	6	79.47	78.08
VI-4	ALLOCATE TIME AND MONEY	3	69.53	71.87
VI-5	COMPLETE CHECKS AND MONEY ORDERS	3	85.90	83.03
VI-6	SOLVE RATE, TIME, DISTANCE PROBLEMS	3	81.17	83.50
VI-7	COMPUTE SALARIES AND WAGES	4	78.28	79.40
	Total	**95**	**76.48**	**77.17**

TABLE 9

A Comparison of the Average Difficulty Level (percentage correct) on the Live Administration of the AHSGE for Mathematics

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1	READ AND WRITE: MONEY VALUES, NUMBERS	3	95.33	95.67
I-2	COMPARE DECIMALS: COMPARE FRACTIONS	3	74.67	76.00
I-3	COMPUTATION: WHOLE NUMBERS	6	95.83	95.67
I-4	COMPUTATION: DECIMALS	6	90.17	92.50
I-5	COMPUTATION: FRACTIONS	6	72.17	66.83
I-6	CONVERSION: DECIMALS AND PERCENTS	3	78.33	75.33
I-7	APPLICATION: RATION, %, DISC, TAXES, COMM	4	67.25	68.75
I-8	CONVERSION: FRACTIONS AND DECIMALS	4	72.25	73.75
I-9	AVERAGES OF WHOLE AND DECIMAL NUMBERS	3	85.67	83.67
I-10	CONVERSION: UNITS OF MEASURE	4	55.00	49.50
II-1	SOLVE PROBLEMS INVOLVING TIME	3	75.67	78.67
II-2	MEASURE LENGTHS BY USE OF A RULER	4	85.75	80.00
II-3	CAPACITIES	3	86.00	92.00
II-4	FIND PERIMETERS	4	92.50	91.75
II-5	FIND RECTANGULAR AREAS	4	50.25	48.00
III-1, 2	INTERPRET: GRAPHS, TABLES, CHARTS	4	85.50	83.50
III-3	INTERPRET: SCALE DRAWINGS	3	86.33	83.33
IV-1	APPROX. BY ROUNDING NUMBERS	3	90.67	88.00
IV-1, 2, 3	GEOMETRIC FORMS AND CONCEPTS	6	87.33	94.83
VI-1, 2, 3	DETERMINE CHANGE: COMPUTE COST, COMPUTE CASH/CREDIT PURCHASE	6	86.00	84.00
VI-4	ALLOCATE TIME AND MONEY	3	74.33	73.33
VI-5	COMPLETE CHECKS AND MONEY ORDERS	3	90.00	87.33
VI-6	SOLVE RATE, TIME, DISTANCE PROBLEMS	3	89.00	88.67
VI-7	COMPUTE SALARIES AND WAGES	4	87.25	84.50
	Total	**95**	**81.58**	**80.93**

TABLE 10

A Comparison of the Average Difficulty Level (percentage correct) on the Initial Item Pilot of the AHSGE for Language

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1	PRONOUN-ANTECEDENT AGREEMENT	9	93.39	93.38
I-2	CORRECT FORMS OF NOUNS AND VERBS	15	79.94	80.17
II-1	IDEAS IN SEQUENTIAL ORDER	5	80.94	80.94
II-2	SENTENCES ORGANIZED	9	80.49	80.51
II-3	ARRANGE DIRECTIONS IN LOGICAL ORDER	4	86.58	86.73
IV-1	INCLUDE NECESSARY INFO FOR MESSAGE OR REQUEST	4	85.30	85.28
IV-2	DETERMINE MISSING OR IRRELEVANT INFO	4	85.63	85.55
V-1	PROPER FORMAT OF A BUSINESS LETTER	9	62.48	62.34
V-2	PROPER FORMAT OF A FRIENDLY LETTER	8	70.79	70.59
VI-1	COMPLETE COMMON FORM OR APPLICATION	9	82.64	82.54
VII-1	SPELLING	9	88.30	88.33
VIII-1, 2, 3, 4	PERIODS, QUESTION MARKS, EXCLAMATION POINTS, COMMAS, APOSTROPHES	16	78.63	78.62
VIII-5	QUOTATION MARKS	4	66.13	66.15
VIII-6	COLONS	4	64.15	64.10
IX-1	CAPITALIZATION	10	87.59	87.55
	Total	**119**	**80.00**	**80.00**

TABLE 11

A Comparison of the Average Difficulty Level (percentage correct) on the Form Pilot of the AHSGE for Language

Competency Number	Competency Description	Number of Items	Form A	Form B
I-1	PRONOUN-ANTECEDENT AGREEMENT	9	95.53	94.50
I-2	CORRECT FORMS OF NOUNS AND VERBS	15	83.55	81.79
II-1	IDEAS IN SEQUENTIAL ORDER	5	83.52	84.16
II-2	SENTENCES ORGANIZED	9	83.52	75.70
II-3	ARRANGE DIRECTIONS IN LOGICAL ORDER	4	88.43	88.73
IV-1	INCLUDE NECESSARY INFO FOR MESSAGE OR REQUEST	4	88.05	88.30
IV-2	DETERMINE MISSING OR IRRELEVANT INFO	4	88.33	89.00
V-1	PROPER FORMAT OF A BUSINESS LETTER	9	67.90	69.16
V-2	PROPER FORMAT OF FRIENDLY LETTER	8	75.18	76.10
VI-1	COMPLETE COMMON FORM OR APPLICATION	9	83.87	85.53
VII-1	SPELLING	9	91.08	89.76
VIII-1, 2, 3, 4	PERIODS, QUESTION MARKS, EXCLAMATION POINTS, COMMAS, APOSTROPHES	16	83.99	83.53
VIII-5	QUOTATION MARKS	4	65.60	69.48
VIII-6	COLONS	4	76.08	72.75
IX-1	CAPITALIZATION	10	89.50	88.24
	Total	**119**	**83.48**	**82.69**

TABLE 12

A Comparison of the Average Difficulty Level (percentage correct) on the Live Administration of the AHSGE for Language

Competency Number	Competency Description	Form A # Items	Form A	Form B # Items	Form B
I-1	PRONOUN-ANTECEDENT AGREEMENT	9	95.89	8	95.25
I-2	CORRECT FORMS OF NOUNS AND VERBS	15	82.93	12	81.58
II-1	IDEAS IN SEQUENTIAL ORDER	5	85.60	4	88.25
II-2	SENTENCES ORGANIZED	9	84.56	6	80.17
II-3	ARRANGE DIRECTIONS IN LOGICAL ORDER	4	89.50	4	86.25
IV-1	INCLUDE NECESSARY INFO FOR MESSAGE OR REQUEST	4	91.75	4	96.00
IV-2	DETERMINE MISSING OR IRRELEVANT INFO	4	91.25	4	93.00
V-1	PROPER FORMAT OF A BUSINESS LETTER	9	76.44	6	78.00
V-2	PROPER FORMAT OF A FRIENDLY LETTER	8	81.13	5	83.60
VI-1	COMPLETE COMMON FORM OR APPLICATION	9	87.22	8	93.13
VII-1	SPELLING	9	91.11	8	90.75
VIII-1, 2, 3, 4	PERIODS, QUESTION MARKS, EXCLAMATION POINTS, COMMAS, APOSTROPHES	16	86.44	14	85.29
VIII-5	QUOTATION MARKS	4	70.75	4	73.75
VIII-6	COLONS	4	83.75	4	74.25
IX-1	CAPITALIZATION	10	91.10	9	89.78
	Total	**119**	**86.05**	**100**	**86.27**

TABLE 13

A Comparison of the Average Difficulty Level (percentage correct) on the Item Pilot, the Form Pilot, and the Live Administration of the AHSGE for Reading, Mathematics, and Language Total Tests

Subject	Item Pilot		Form Pilot		Live Administration	
	Form A Fall 1982	Form B Fall 1982	Form A Spring 1983	Form B Spring 1983	Form A Fall 1983	Form B Spring 1985
Reading	87.53	87.56	90.10	89.25	92.50	92.00
Mathematics	72.47	72.48	76.48	77.17	81.58	80.92
Language	80.00	80.00	83.48	82.69	86.05	86.21

Table 14 provides the summary statistics for all live administrations from Form 0010 which was administered in Fall 1983 through Form 0160 which was administered in Spring 1991. Odd numbered forms were administered in the fall of each year and the following even numbered forms were administered in the spring of each year. As shown in Table 14, the difficulty level and the discrimination index have remained relatively stable over the sixteen live administrations.

Summary

This paper has provided a comparison of the difficulty level of common items measuring competencies on the initial item pilot, the form pilot, and the live administration of the AHSGE. The significance of the study was the demonstration of the stability of the difficulty level of common items from the pilot administrations to the live administrations of the AHSGE. Also, this study demonstrated the consistency of the difficulty level for the parallel forms of the AHSGE from the initial pilot through actual live administrations. At each stage of the AHSGE development or administration, the average difficulty for the parallel forms differed no more than one percent as shown in Table 13. As expected, the difficulty level of items was slightly lower on the pilot administrations than on the live administration; however, the discrimination index remained relatively stable. The results of this study support the validation of the test development procedures used for the AHSGE.

TABLE 14

Summary Statistics for Live Forms of the AHSGE (Based on First Attempts Only)

Subject Form	n	# of Items	Mean Difficulty Level*	M	Mean Discrimination Index*	SD	Cronbach Alpha
R0010	48,612	80	.9249	73.15	.5873	12.45	.973
R0020	1,285	80	.8922	71.37	.4962	11.74	.959
R0030	46,754	80	.9531	74.86	.4392	08.19	.944
R0040	1,549	80	.9200	73.57	.4471	09.38	.948
R0050	47,953	80	.9357	74.81	.4309	07.88	.939
R0060	1,629	80	.9119	72.95	.4822	10.48	.956
R0070	48,849	80	.9265	74.09	.3949	07.74	.928
R0080	2,028	80	.9230	73.85	.4595	09.54	.952
R0090	49,048	80	.9240	73.92	.3772	07.48	.920
R0100	2,322	80	.9342	74.74	.4065	07.84	.936
R0110	46,725	80	.9436	75.49	.3801	06.77	.923
R0120	2144	80	.9075	72.60	.3827	08.48	.926
R0130	45,147	80	.9453	75.62	.3911	06.84	.928
R0140	2,187	80	.9043	72.34	.3932	08.71	.929
R0150	44,176	80	.9468	75.74	.3829	06.62	.924
R0160	2,164	80	.9075	72.60	.4185	09.07	.937
M0010	48,612	95	.8158	76.83	.4745	16.82	.964
M0020	1,260	95	.7737	73.50	.4289	16.39	.958
M0030	46,806	95	.8300	78.85	.3995	14.05	.950
M0040	1,562	95	.8093	76.85	.4202	15.08	.955
M0050	48,067	95	.8345	79.22	.3786	13.12	.943
M0060	1,540	95	.8009	76.09	.4194	15.33	.955
M0070	48,949	95	.8517	80.90	.3733	12.61	.943
M0080	1,975	95	.8039	76.38	.3918	14.73	.950
M0090	49,123	95	.8496	80.72	.3530	12.00	.936
M0100	2,272	95	.8206	77.91	.3835	13.34	.946
M0110	46,819	95	.8442	80.20	.3529	12.01	.935
M0120	2,138	95	.8089	76.85	.3720	13.82	.944

*Includes some error due to rounding

TABLE 14

Summary Statistics for Live Forms of the AHSGE (Based on First Attempts Only)

Subject Form	n	# of Items	Mean Difficulty Level*	M	Mean Discrimination Index*	SD	Cronbach Alpha
M0130	45,248	95	.8423	80.02	.3609	12.37	.939
M0140	2,152	95	.8111	77.05	.3649	13.37	.940
M0150	44,263	95	.8419	79.98	.3534	12.08	.935
M0160	2,161	95	.8062	76.59	.3929	14.40	.948
L0010	48,612	119	.8605	101.18	.5002	19.63	.972
L0020	1,290	119	.8274	98.44	.4422	19.23	.966
L0030	46,778	100	.8779	87.82	.3994	12.33	.945
L0040	1,562	100	.8627	86.22	.4121	13.29	.949
L0050	48,030	100	.8967	89.61	.3903	11.24	.941
L0060	1,582	100	.8574	85.74	.4243	14.00	.953
L0070	48,887	100	.8816	88.10	.3501	10.49	.924
L0080	2,022	100	.8614	86.13	.3895	12.71	.942
L0090	49,047	100	.8899	89.00	.3320	09.63	.915
L0100	2,347	100	.8607	86.05	.3677	11.70	.933
L0110	46,773	100	.9008	90.08	.3546	10.06	.928
L0120	2,148	100	.8441	84.41	.3180	10.70	.910
L0130	45,218	100	.8964	89.64	.3530	10.13	.927
L0140	2,172	100	.8524	85.24	.3199	10.63	.913
L0150	44,164	100	.8967	89.67	.3569	10.22	.928
L0160	2,256	100	.8422	84.22	.3585	11.73	.927

*Includes some error due to rounding

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